TRU Waste Inventory CRA-2004

DOE/EPA Meeting on Changes from the CCA to the CRA

April 20-21, 2004

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000

Topics Covered

- **CRA-2004 Inventory Update Process**
- **CRA-2004 Inventory Information**
- **Comparison to TWBIR Revision 3**

CRA-2004 Inventory Update Process

- **Data Collection**
- **Database Development**
- **Data Compilation and Analysis**
- **Documentation**

Data Collection Process

- **Data Collection Procedure – SP 9-6 *Baseline Inventory Report (BIR) Change Report Data Collection and Entry***
  - **Contacted 27 TRU Waste Generator Sites**
    - **Identified Changes to TWBIR Rev. 2**
    - **Explained Reasons for Change**
  - **Visited Large Quantity Sites and Some Small Quantity Sites**
  - **Obtained Emplaced Data from WIPP Waste Information System (WWIS)**
- **Submitted Records to SNL WIPP Record Center under NP 17-1**

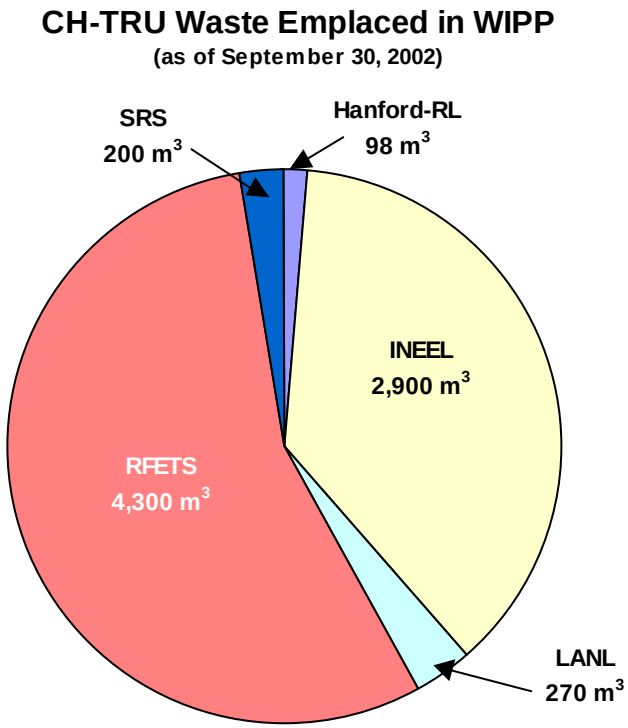
TWBID Revision 2.1

- **Database Development Procedure - NP 19-1** ***Software Requirements***
  - **Based on TWBIR Revision 2 Database**
  - **Expanded to perform required calculations within the database**
  - **Database developed in MS Access 2000**

Data Analysis and Compilation

- **Tables Provided by Database**
  - **Anticipated Inventory**
  - **Scaling Factor**
  - **Disposal Inventory**
  - **Waste Material Parameter Disposal Inventory**
  - **Radionuclide Disposal Inventory**
- **Analyses Performed with Database information using NP 9-1, *Analyses***
  - **Cement**
  - **Pyrochemical Salts**
  - **Oxyanions and Complexing Agents**

CH-TRU Waste Emplaced in WIPP



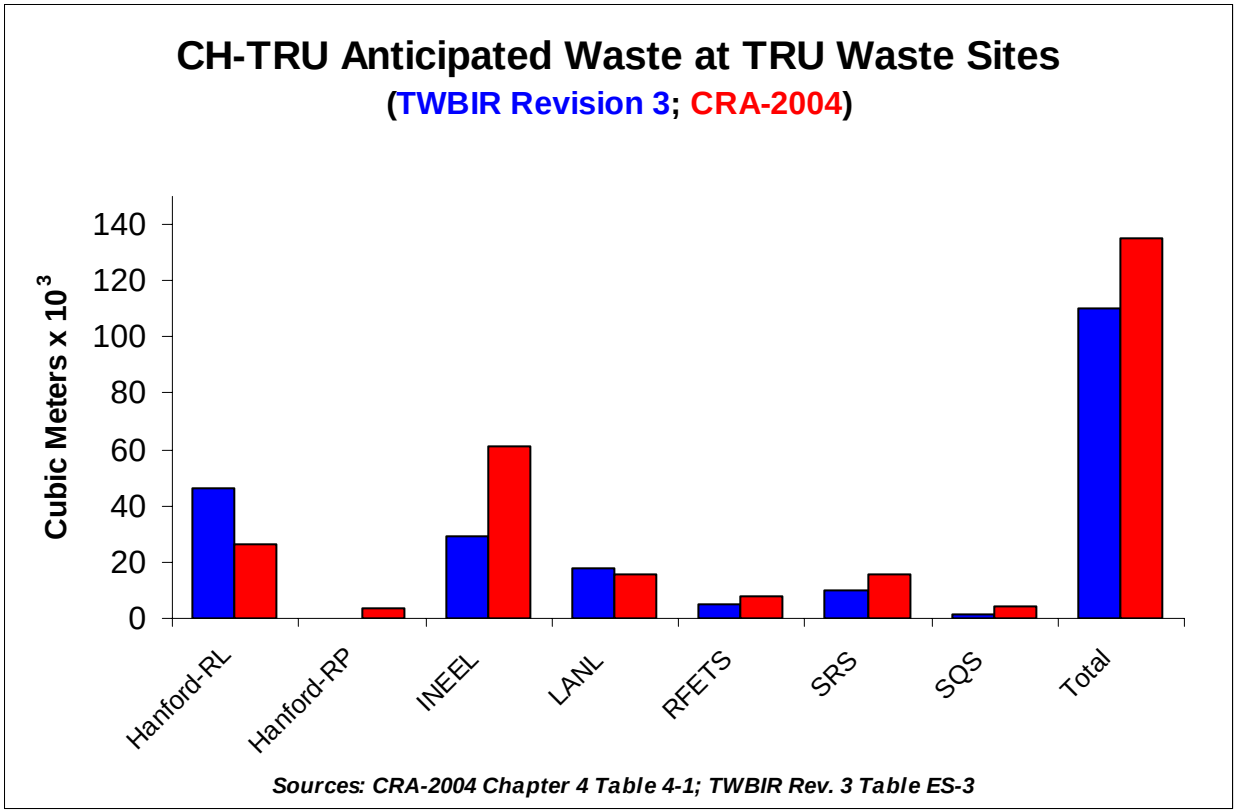
Source: CRA-2004 Chapter 4 Table 4-1

Total emplaced CH-TRU volume is 7,768 m³.

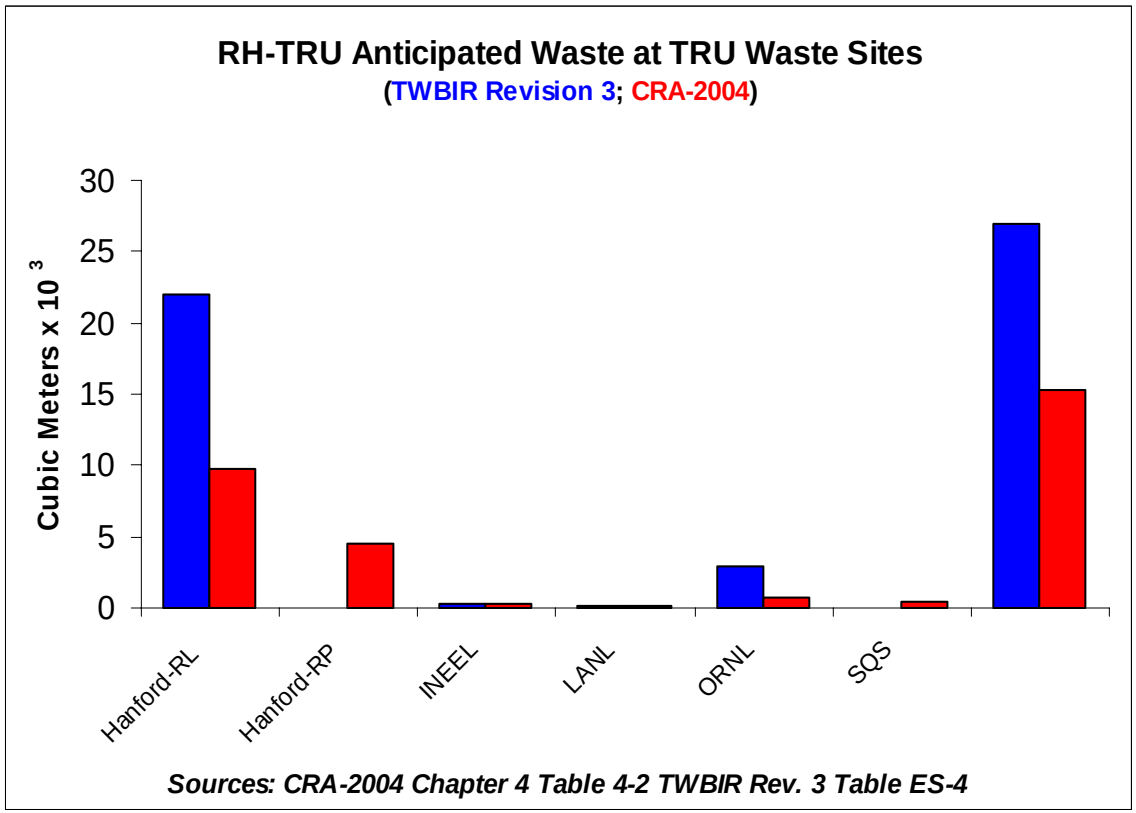
Anticipated Inventory Volume

The sum of the stored and projected TRU waste inventories (does not include emplaced waste).

CH-TRU Anticipated Waste



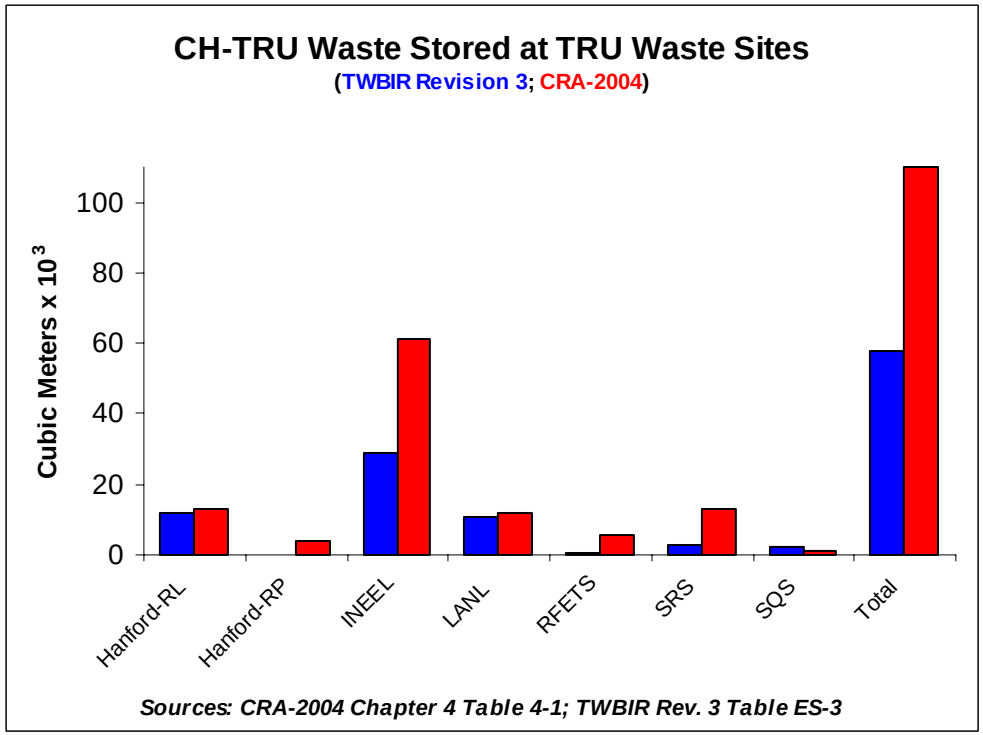
RH-TRU Anticipated Waste

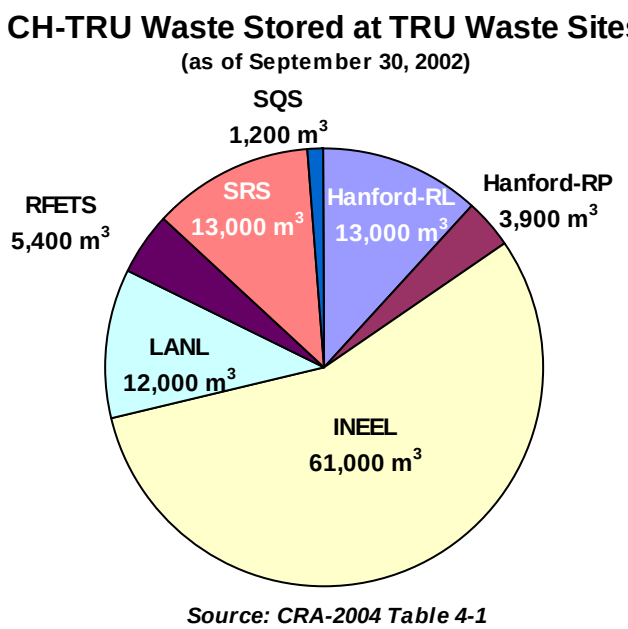


Stored Inventory Volume

Also referred to as "Retrievably Stored" inventory. The part of the anticipated waste inventory that is stored in such a fashion that it can be readily retrieved. Retrievably stored waste includes waste stored at the TRU waste sites since approximately 1970 in buildings or berms with earthen cover and does not include any waste generated prior to 1970. Retrievably stored waste also includes waste that is stored in underground storage tanks, ponds and as decontamination and decommissioning material identified for disposal that requires retrieval at the TRU waste sites.

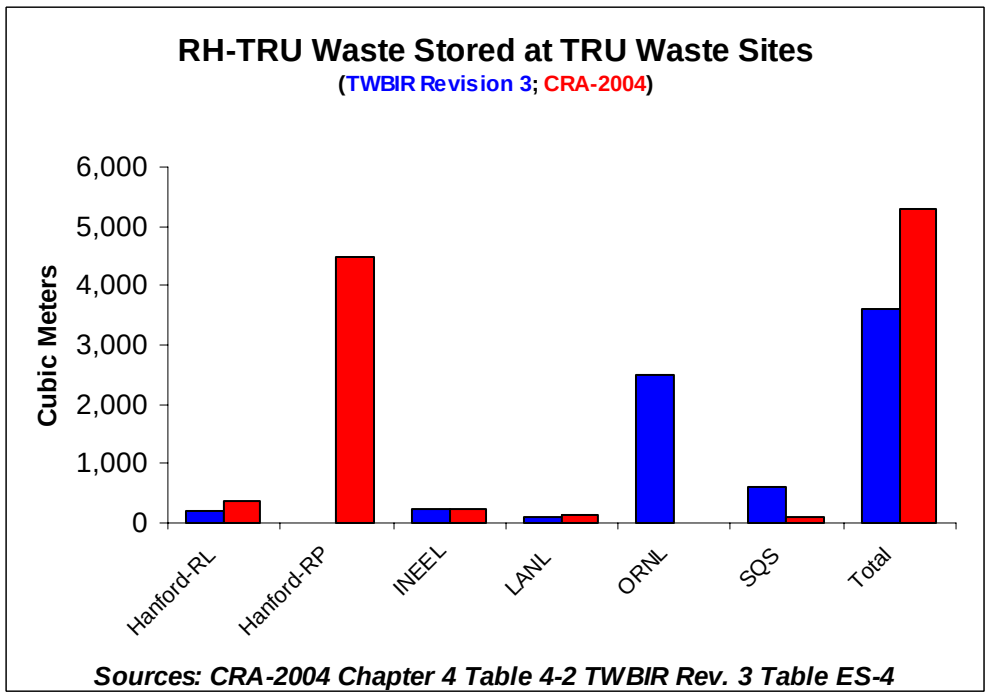
CH-TRU Waste Stored at TRU Waste Sites



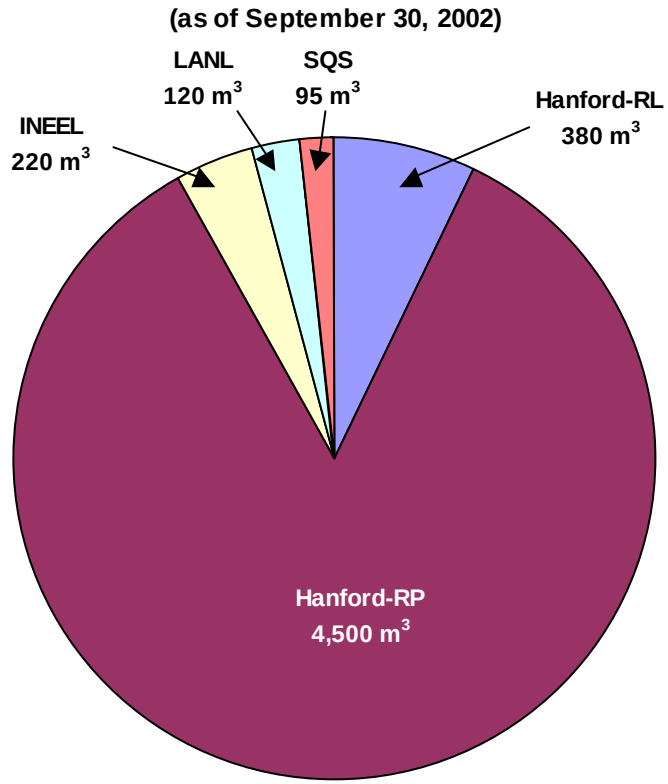


Total Stored CH-TRU volume is 110,000 m³.

RH-TRU Waste Stored at TRU Waste Sites



Sources: CRA-2004 Chapter 4 Table 4-2 TWBIR Rev. 3 Table ES-4



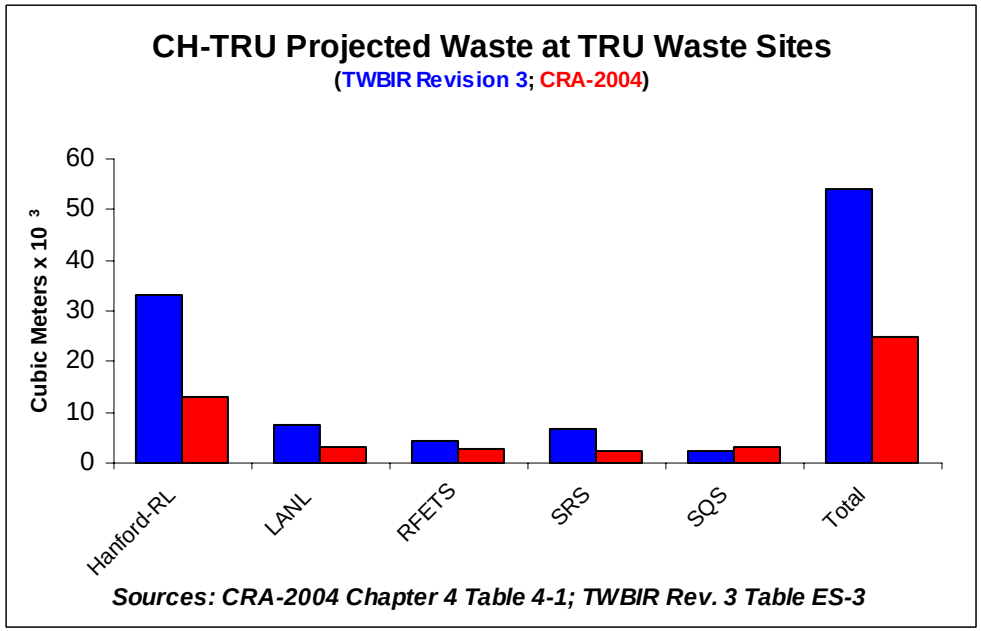
Source: CRA-2004 Chapter 4 Table 4-2

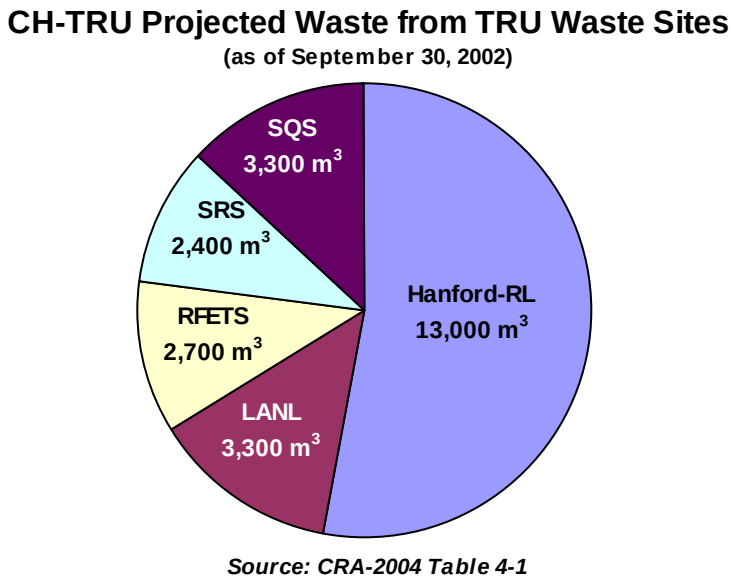
Total Stored RH-TRU volume is 5,300 m^3.

Projected Inventory Volume

- **That part of the TRU inventory that has not been generated, but is estimated to be generated at some time in the future by the TRU waste sites. The projected inventory is the same as the to-be-generated waste referred to in 40 CFR 194.24 (a).**

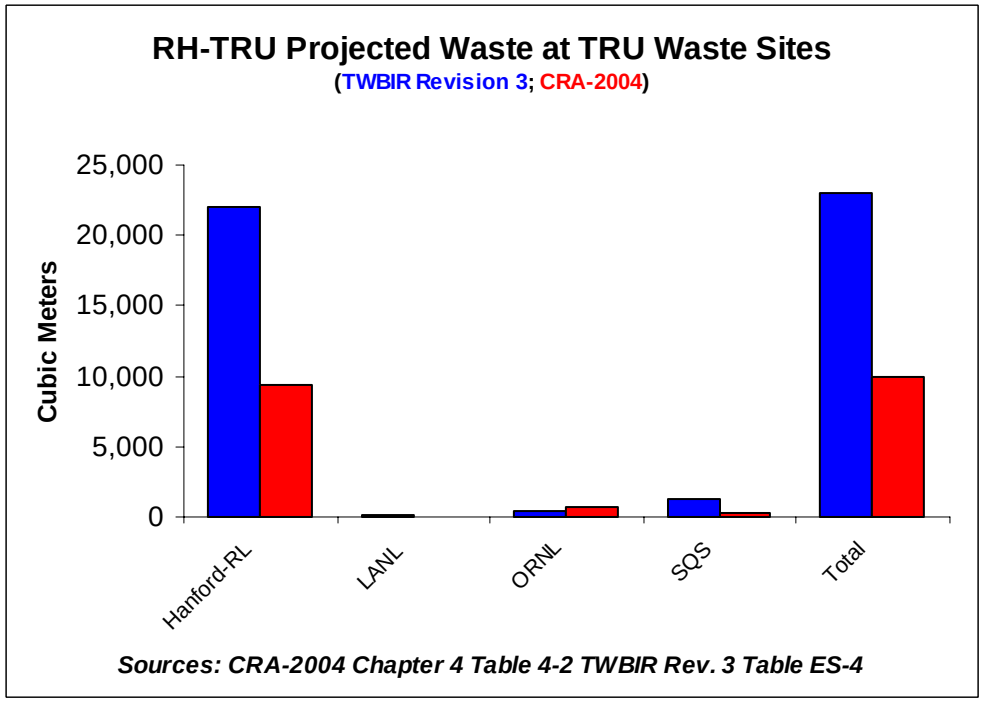
CH-TRU Projected Waste at TRU Waste Sites

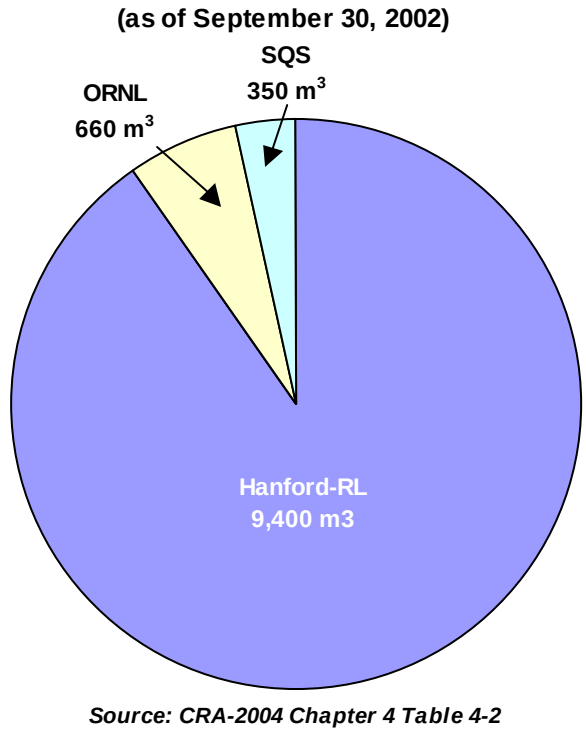




Total Projected CH-TRU volume is 25,000 m³.

RH-TRU Projected Waste at TRU Waste Sites





Total Projected RH-TRU volume is 10,000 m³.

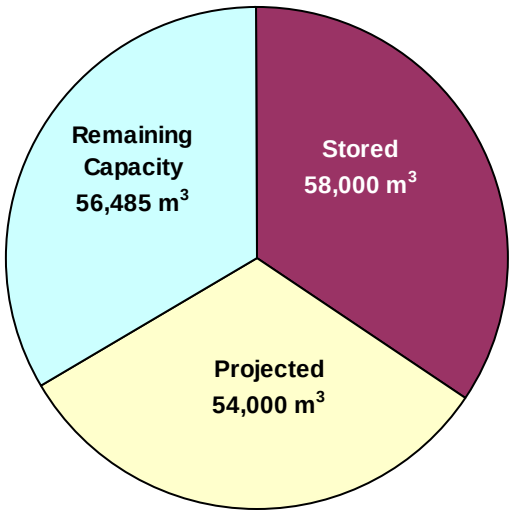
Disposal Inventory Volume

The inventory volume defined for waste emplacement in the WIPP to be used for CRA-2004 PA calculations. The LWA identifies the total amount of TRU waste allowed in the WIPP as approximately 175,564 m^3. The "Agreement for Consultation and Cooperation" limits the RH inventory to approximately 7,079 m^3.

The resulting CH-TRU waste volume allowed would be 168,485 m^3.

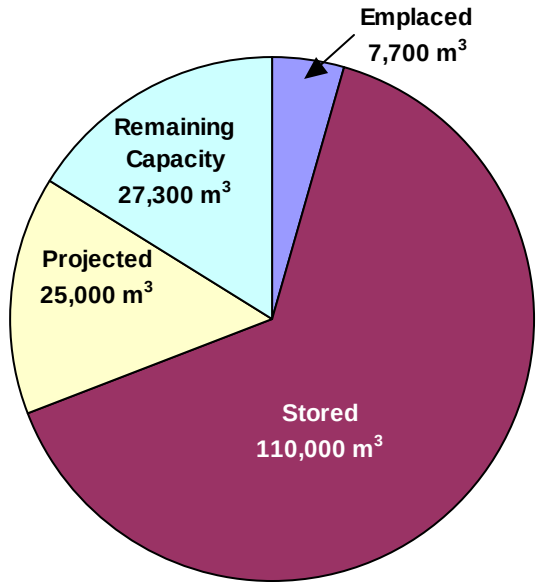
CH-TRU Waste Identified for Disposal at WIPP

(TWBIR Revision 3)



Source: TWBIR Rev. 3 Table ES-3

(as of September 30, 2002)

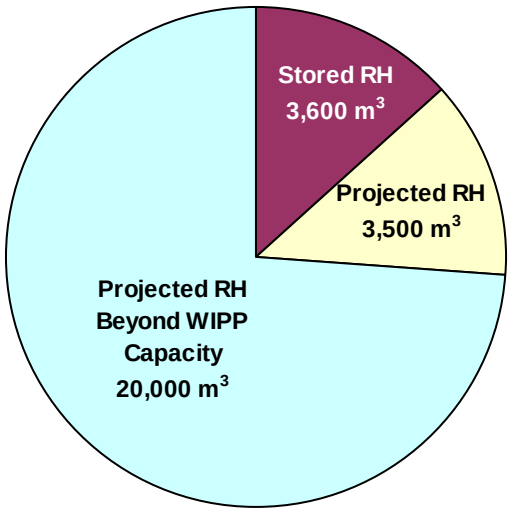


Source: CRA-2004 Table 4-1

The CH-TRU waste volume allowed is 168,485 m³.

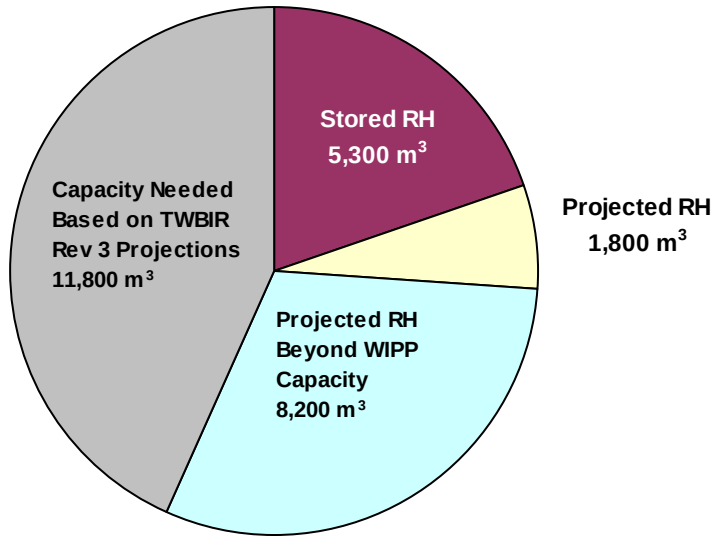
RH-TRU Waste Identified for Disposal at WIPP

(TWBIR Revision 3)



Source: TWBIR Rev. 3 Table

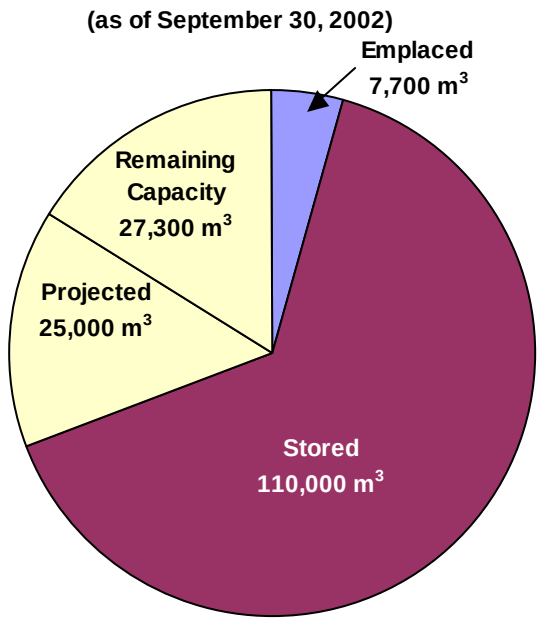
(as of September 30, 2002)



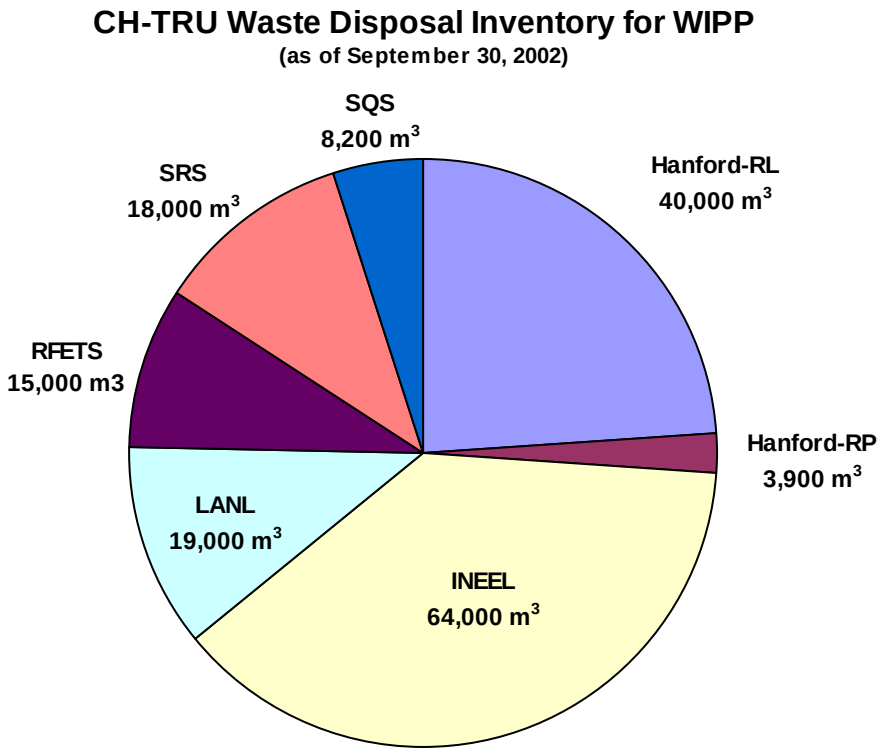
Source: CRA-2004 Chapter 4 Table 4-2

The RH-TRU waste volume allowed is 7,079 m^3.

CH-TRU Waste for Performance Assessment

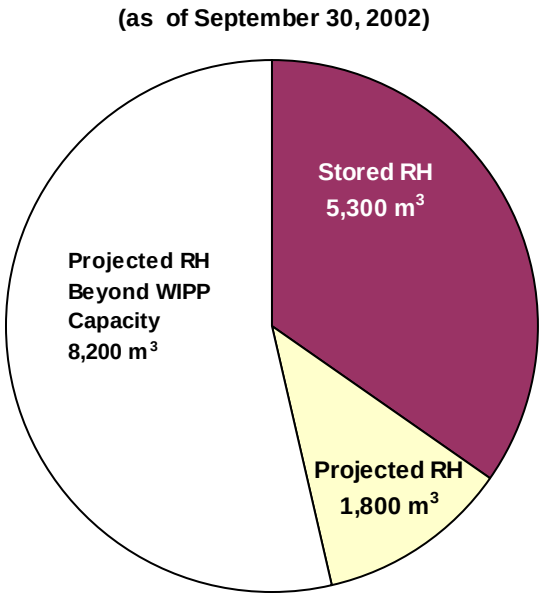


Source: CRA-2004 Table 4-1

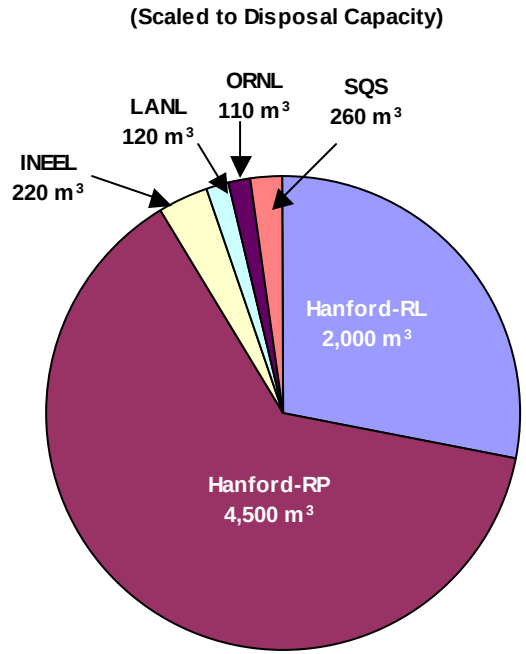


Source: CRA-2004 Table 4-1

RH-TRU Waste for Performance Assessment

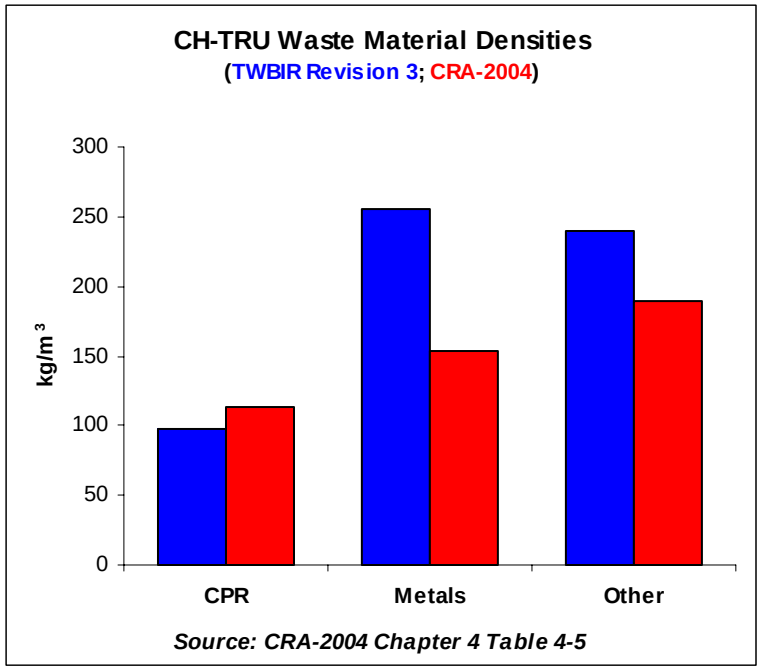


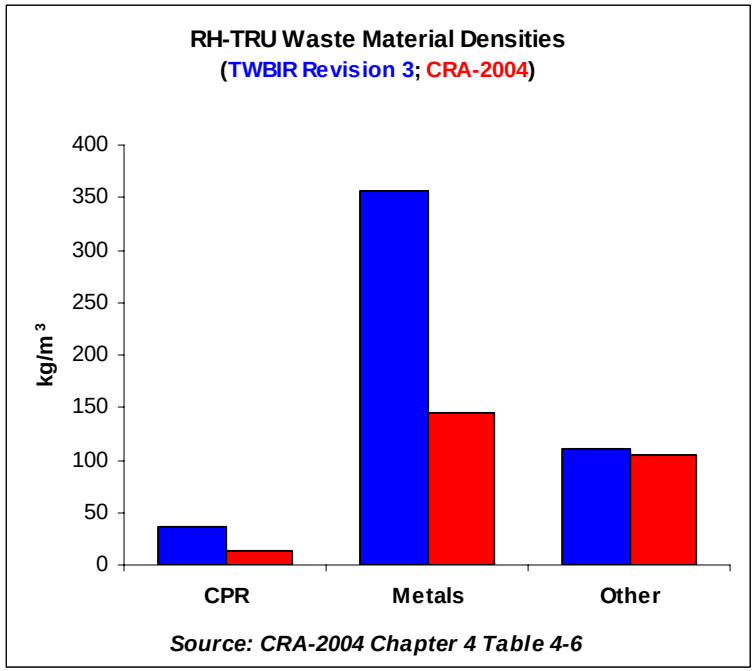
Source: CRA-2004 Chapter 4 Table 4-2



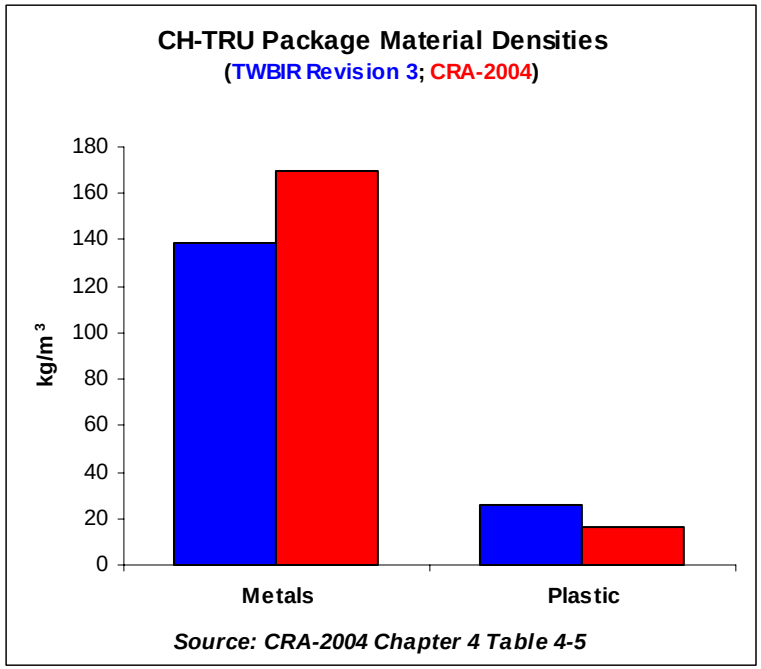
Source: CRA-2004 Chapter 4 Table 4-2

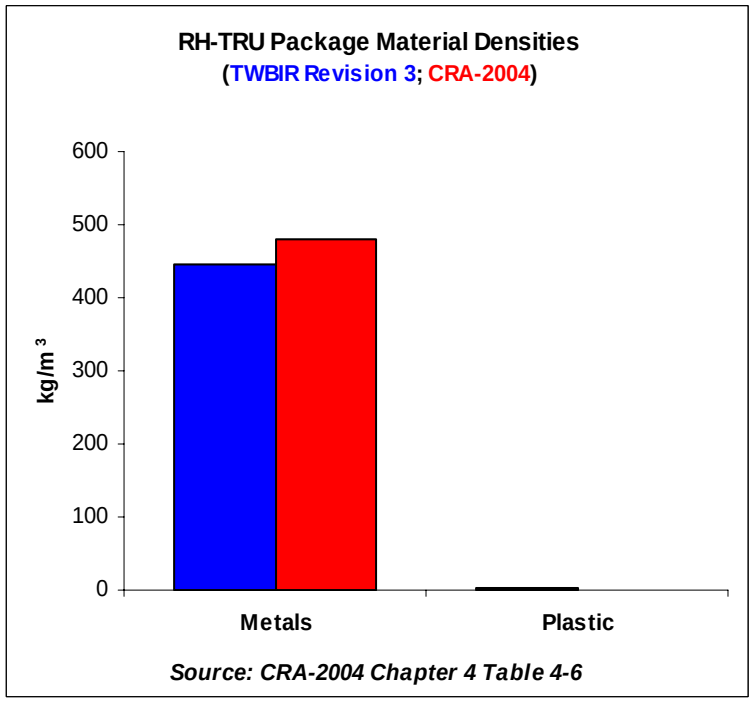
Waste Material Densities





Package Material Densities

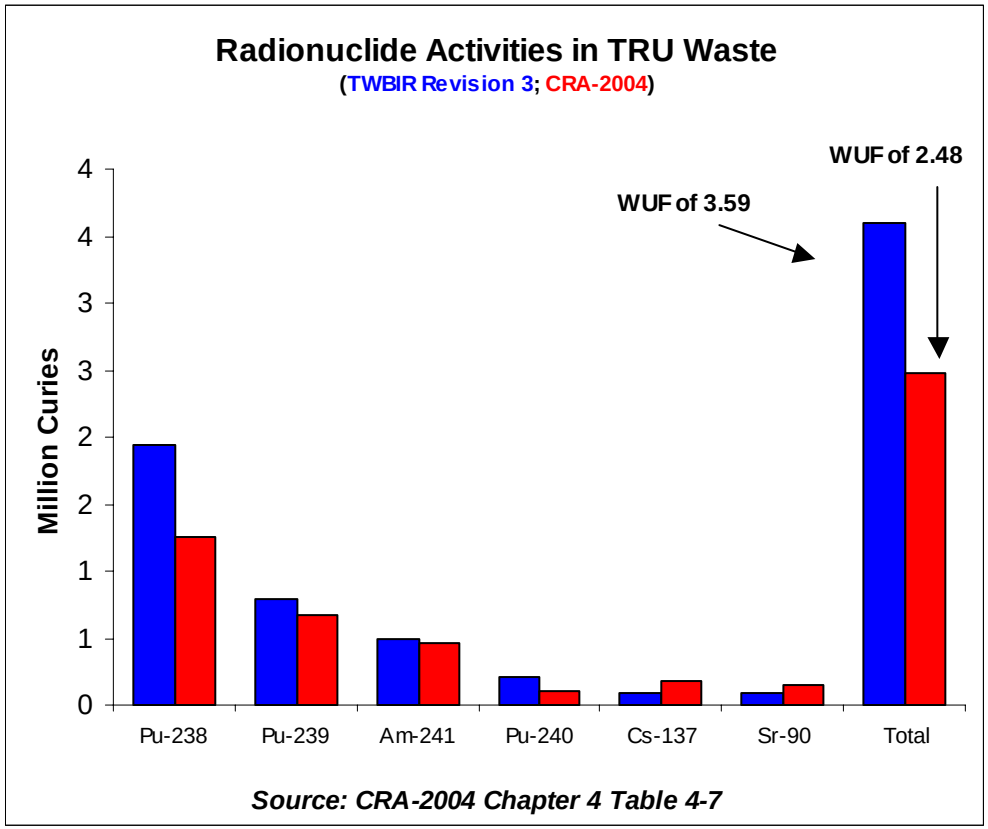




Waste Unit Factor

The "waste unit factor" is the number of millions of curies of α-emitting TRU radionuclides with half-lives longer than 20 years (40 CFR Part 191, Appendix A), based on the TRU waste inventory to be disposed.

Radionuclide Activities in TRU Waste



Radionuclide Activities Decayed to Closure and Scaled for PA

Summary

- Higher Degree of Control
  - data control
  - database configuration control
  - control of analyses
  - control of records
- More information available from sites
  - Sites are shipping
  - Characterization activities
  - Emplaced waste
- Notable Changes
  - More CH/ Less RH - volume identified
  - More CPR identified
  - Radionuclide activities have decreased

Inventory accuracy is expected to increase with subsequent recertifications